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VERB-PARTICLE POSITION IN ENGLISH: AN EXPERIMENTAL STUDY

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled VERB-PARTICLE POSITION IN ENGLISH: AN EXPERIMENTAL STUDY submitted by PATRICIA JEAN HUNTER in partial fulfilment of the requirements for the degree of MASTER OF SCIENCE in LINGUISTICS.

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Abstract

The present study investigates the factors governing particle position in English sentences.

Various authors have proposed conflicting principles to account for alternative V-PRT-NP and V-NP-PRT orderings of verb-particle combinations and associated direct object noun phrases. These principles include Free Positioning (proposed by the Transformationalists), Syntactic Distance, Syntactic Complexity, and the Given-New ordering of sentential information.

Two experimental studies were designed to test the operation of these principles with both "light" and "heavy" direct object noun phrases. The Naturalness Study investigated acceptability judgements for varied particle positions in controlled, isolated sentences containing both light and heavy object nouns. The Discourse Study examined subject preference for particle position with light object noun phrases, as a function of four patterns of information distribution (Given-Given, Given-New, New-Given, and New-New). Sixty-four high school students between seventeen and eighteen years of age served as subjects for the Naturalness Study, with a reduced number participating in the Discourse Study.

The results indicate that both the Structural Distance and Structural Complexity principles interact in determining the acceptability of particles positioned before, within, and after heavy direct object noun phrases. For light object

phrases, when the Given-New principle competes with the Structural Distance and Structural Complexity principles in terms of preferred particle placement, this strategy tends to be overruled, thus explaining why particles are generally preferred immediately after the verb. The Transformationalists' principle was not found to be operative in either study.

This study also suggests that a variety of factors influence acceptability judgements of particle positioning. Among these are the directional nature of the particle, the ambiguity of the resulting sentence, and even the presentation mode of the study itself.

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I. Introduction

A. Preliminaries

> Being or not being a phrasal verb is a matter of degree. (D. Bolinger, 1971, p. 6)

Bolinger's remark reflects the confusion and controversy surrounding these idiomatic constructions. Linguists are even in dispute as to what to call them. Tara (1960) refers to "two-word" verbs, Live (1965) to "discontinuous" verbs, and Palmer (1974) to "compound" verbs. Palmer labels the component parts of the compound verb as verb plus particle and notes that the term "particle" is useful in that it makes no distinction between preposition and adverb. Fraser (1976) extends this line of reasoning by adopting the cover term "verb-particle combination". Fraser's terminology is best suited to the purposes of this study, where the particle (its position and effect) is described as an entity separate from its verb.

Degrees of distinction have been maintained between verb-particle combinations and other similar structures (i.e., non-idiomatic verb-preposition and verb-adverb sequences such as "He turned up the driveway." and "He threw up the ball.") on the basis of syntactic patterning, semantic interpretation, and phonotactic constraints. Bolinger's (1971) criterion is representative of his syntactic orientation. His tests for verb-particle membership include the following (p. 6):

1. The verb-particle combination is replaceable by a simple verb. ("threw out" = "discarded")
2. If transitive, the combination should passivize. ("Their grandmother brought up the children." converts to "The children were brought up by their grandmother.")
3. If transitive, the combination should yield an action nominal. ("He looked up the information." can convert to "His looking up the information ...")
4. If the combination is transitive, the particle can either precede or follow the noun object. ("They bought (out) their competitors (out).")
5. If the combination is transitive, pronouns usually precede the particle. ("You're putting him on.")
6. Adverbs cannot intervene between the verb and particle unless the latter appears in its most literal sense. (*"The debator drew his opponent only part-way out.")
7. An adverb can be accented. ("He's not the person I was looking up.")

B. Aim of the Study

Quirk and Greenbaum (1972) utilize test 4 as a defining characteristic for verb-particle combinations. The fact that English sentence structure allows both V-PRT-NP and V-NP-PRT sequences is undisputed. Whether both forms are equally natural in all contexts is a matter of debate. What, if anything, governs the position of the particle from one sentence or situation to the next? Semantic strategies for

particle placement (i.e., Sroka's (1972) argument for the semantic unity versus disparateness of verb-particle combinations) are not sytematically addressed in the literature and therefore are excluded from this inquiry. An investigation into the phonotactic constraints on particle position would be beyond the limited scope of this study. Furthermore, it is contended that phonological factors such as stress are an effect of, and not cause for, the positioning phenomenon. The syntactic strategies that various authors have advanced can be summarized under the following four major principles:

(1) A free positioning of the particle (the transformationalist's point of view).

(2) The principle of the syntactic distance between the verb and its particle.

(3) The principle of structural complexity of object nouns that intervene between verb and particle.

(4) The given-new information principle of particle placement.

The present study was designed to investigate the effects of these principles on carefully controlled verb-particle structures.

C. Overview

Chapter Two consists of a review of studies concerning verb-particle position. First, the literature of a formal, descriptive nature is reviewed. A summary of the experimental evidence follows. Proponents of the four syntactic principles (discussed in section B) are reviewed in chronological order. In Chapter Three, the designs of the two related experiments are outlined. The results of each experiment are evaluated according to the proposed hypotheses in Chapter Four. Chapter Five summarizes the main findings of the present study, proposes tighter experimental controls for future replications of this type of study, and suggests other areas of related research.

II. Review of Studies of Verb-Particle Constructions

A. Introduction

The issue of English particle placement has been addressed by a number of linguists. This chapter reviews the various syntactic theories that have been advanced under four major principles: the transformationalist's principle of optional particle placement, the principles of structural distance and structural complexity, and the given-before-new principle of sentential information distribution.

Most of the syntactic explanations offered by the authors reviewed below are based on formal, descriptive grounds with little evidence of an experimental nature. In this chapter, the "descriptive" literature is chronologically reviewed prior to a discussion of the experimentally-oriented material. The chapter concludes with a description of the motivations for the present study.

B. Descriptive Literature

The Transformationalist Principle

Chomsky (1957) argued that phrase structure grammars could not readily handle discontinuous elements such as verb-particle combinations. He suggested that an optional transformational rule must be applied to convert an already well-formed sentence such as "The police brought in the criminal." into another well-formed sentence "The police brought the criminal in.". This transformation operates on

the V-PRT-NP string (where the NP is not a pronoun) to interchange the particle and noun phrase elements. Thus, the V-NP-PRT sequence is assumed to be a mere structural variant of the base form, with no change of meaning associated with it.

Although agreeing that transitive verb-particle combinations can take a contiguous or noncontiguous order, Tara (1960) contended that in some cases the choice in order was accompanied by a clear distinction in meaning. His illustrative examples were perhaps not as clear as intended, both being of questionable acceptance as English sentences:

(a) "He jumped down the horse." (from the horse)

(b) "He jumped the horse down." (forced the horse to jump down)

Sroka (1972) drew a distinction between the distributional categories of particles (referring to potential occurrences) and their syntactic values (referring to actual occurrence in a given construction). Authors such as Jespersen (1928), Strang (1968), and Bolinger (1971), focused on differentiating particle types in terms of form or function or both. Sroka, however, outlined the environments that different types of particles had in common. According to him, while particles may function as adverbs and prepositions in terms of syntactic values, they may be categorized in terms of adverbs, prepositions, and adverb-prepositions in terms of distribution. Adverbial particles can occur between the verb and noun(group), or in

final position. ("He didn't throw his money away.") Prepositional particles can occupy the former position or one preceding a personal pronoun. ("The officers paused as they looked at her."). Adverb-prepositional particles can occupy all three of the above positions. ("Hundreds of people passed by John.") Arguments based on the mere labelling of structures fail to address the main issue which is why the same particle may precede a direct object noun phrase in one context and follow it in another.

Labov (1969) suggested that two factors governed the application of optional rules (p.9):

1. An input variable which sets the overall frequency with which a rule is selected.
2. Variable constraints which differentiate the frequency with which a rule applies according to the syntactic and phonological features of the environment.

He postulated "inherently variable optional rules" to determine why "speakers will characteristically produce X in environment Y more often than in environment Z" (p.10).

Referring to Chomsky's particle movement rule, Fraser (1972) claims that a continuum of optionality, and not a sharp optional/obligatory distinction, reflects the true nature of rule application in actual language use. He speculated that English phonotactic requirements of final verb phrase stress may affect the optionality of particle placement, although admitting that factors such as stress were poorly understood. Fraser's objections to the concept

of a "variable" rule were not based on the enormous accounting system that such a rule implied, but rather on the argument that such rules merely described observable behavior and made no attempt to explain the underlying causes. Questions such as why an optional rule like particle movement is applied more frequently in one environment than another, were not resolved. Fraser suspected that various interacting forces might affect the application of the particle rule.

In a later survey, Fraser (1976) indicated that individual transitive verb-particle combinations exhibited different possibilities of particle movement. Some prohibit movement ("pluck up courage"), others permit it ("put (on) some weight (on)"), and some require movement (*"boss about someone"). What does one do with a verb-particle sequence that "ought" to undergo particle movement but does not? Fraser's suggestion was to characterize each verb-particle idiom according to a "Frozenness Hierarchy", which ranged from those idioms that allowed no "distortion" to those that permitted considerable alteration. The strength of this hierarchial scheme was undermined by Fraser's admission that individual speakers may not use a verb-particle combination on the same "level" as he has indicated. He also suggested, "...if many readers find the facts in contradiction to their ideolects, then we must seriously suspect the entire hierarchial notion" (p. 23).

The Oxford Dictionary of Current Idiomatic English (1975) also subclassifies transitive verb-particle combinations according to their movement possibilities, although its classifications do not always coincide with Fraser's. For instance Fraser labels the verb-particle combination "bite one's head off" as ungrammatical in its "moved" form, whereas *The Oxford Dictionary* lists "bite somebody's head off" as a lexical entry (*somebody* is used as a cover term).

Smaby and Baldi (1981) indicated that the usual practice of transformationalists was to posit an underlying structure with a paired verb-particle lexical item. The only support for this contiguous base structure generation was that it resulted in an efficient statement of co-occurrence restrictions on verbs and particles. The authors established a case for the noncontiguous base particle postion. An optional rightward noun phrase movement rule would operate on an underlying structure such as "Mervin threw the cat out" to yield the alternative order "Mervin threw out the cat". This reformulation of the traditional particle movement transformation has the advantage of providing an unambiguous underlying interpretation for particles with associated "short" (i.e., single word) object noun phrases. "They laid Bill off" clearly means that they put him out of work, whereas "they laid off Bill" is ambiguous as to whether they stopped bothering Bill or put him out of work.

Table 2.1 Frequency of Verb-Particle Constructions

Verbs accompanied by:	ADV-OBJ	OBJ+ADV
up	270	20
together	2	3
over	37	28
out	144	18
on	42	4
off	95	17
in	29	6
down	48	10
back	27	12
away	32	32
aside	12	4
about	2	5

From Dongen (1919); numbers indicate number of quotations cited.

The Structural Distance and Structural Complexity Principles

Dongen (1919) published a table illustrating the frequency of V-ADV-OBJ and V-OBJ-ADV (ADV=PRT) constructions in 899 quotations, taken from a number of books. Table 2.1 summarizes his findings. This table clearly reveals that the V-ADV-OBJ construction was of great frequency in 1919. It does not indicate, however, the type of texts that Dongen researched. One suspects that they were of a highly literary nature and thus might not have accurately reflected the frequency of those constructions in everyday use. Moreover the sentence frames or contexts which contained the verb-particle constructions were not discussed. Dongen

observed that the V-ADV-OBJ construction was by far the more usual one. He concluded that "...When the direct object is rather or very long, for instance when it consists of a clause, the adverb (often a monosyllabic word) for reasons of euphony or logic is put immediately after the verb" (p. 329). The qualifiers "rather and "very" that are employed by Dongen can hardly be regarded as an objective or scientific form of measurement, and the term "logic" is not further addressed.

Dongen claimed that a fossilization process occurred with combinations in which the particle was frequently observed as immediately or closely following the verb. He also suggested that if the direct object noun phrase had a vague or indefinite meaning (i.e., nouns such as "things" or "matter"), its function became almost pronominal and thus it could be placed before the adverb.

Kennedy (1920) was definite about the rules for verb-particle-noun phrase arrangement. An object noun phrase usually followed the particle and whether the object was a noun, a "substantive" phrase or a clause made no difference. However, when the noun phrase was "short", or the speaker wished to emphasize the particle, the object might intervene. (Possible explanations for particle emphasis are discussed under the Given-New heading below.)

Tara (1960), Bolinger (1971), Fraser (1976), and Yassin (1981) all made a distinction between "short" and "long" direct object noun phrase constructions in terms of particle

placement. The terms "short" and "long" were loosely defined. (Does "short" refer to a single N, a DET + N, or a DET + ADJ + N?) Bolinger (1971) suggested that particles were free to stand either directly before or after relative clauses. ("They brought the stuff over that I wanted" or "They brought the stuff that I wanted over."). However, if the particle goes too far to the right , it seems to be "lost." The distance factor was further complicated by ambiguity. Both the context and the particular particle involved determined the degree of ambiguity that would ensue. He concluded that speaker tolerance for far-removed particles was variable. Bolinger also pointed out the transformationalist's dilemma in trying to assign one deep structure representation to a verb-particle combination such as "give up", where surface structures were encountered that differed slightly in meaning, as in:

1 a. He gave up. (quit trying)

b. He gave up his money. (abandoned it)

c. He gave himself up. (surrendered)

The Oxford Dictionary (1975) stated that if the object noun phrase was composed of a single noun or "short" noun phrase, the particle followed the object. The only explanation offered for this strong statement was that when a short object followed certain verb-particle combinations ("get across", "move over","run through"), the particle might be mistaken for a preposition (note Tara, 1960) and the expression thus be misinterpreted, as in the following

examples:

2 a. He saw the crisis through. (survived it)

b. He saw through the crisis. (didn't believe there was one)

Live (1965) grouped particles of this nature into a special class because of their manner of combination with the base verb.

The dictionary indicated, however, that if the short object was extended, the extension of the object could either follow the particle ("The comedian didn't get the jokes across that he prepared") or the whole of the extended object followed the particle ("The comedian didn't get across the jokes that he prepared.") Presumably by the authors' omission of the full extended object preceding the particle as a possible choice (e.g."The comedian didn't get the jokes that he prepared across."), they did not regard this as an acceptable alternative.

Fraser's (1976) position on the optionality of particle placement was further elaborated in terms of "short" and "long" object noun phrases. He suggested that the particle was preferred next to the verb when the object noun phrase was composed of a single word. (Note the contradiction with the *Oxford Dictionary*'s statement.) His accompanying example, "He heated up water in that bucket." versus "He heated water up in that bucket", was interesting in its inclusion of a prepositional phrase following the direct object noun, although Fraser's discussion concerning this

example made no special note of this phrase. The lesser preference stated for the latter example may be attributed not to the shortness of the object noun phrase, but to the intervention of the particle between the noun and following phrase. Fraser suggested that placing determiners with the noun phrases would cause both sentences to become more acceptable. Would there still be a preference for one form over another? This question remained unanswered. In constructions where the direct object noun phrase was "long and complicated", he claimed that the particle must also remain next to the verb. One is left in doubt as to what the intermediate cases are. He starred as unacceptable examples such as "I called the man who left up." and "The ogre ran the sweet innocent little children down.", but judged examples such as "He called all of my best friends up." as being perfectly acceptable. The inference is that the length (i.e., the number of words) and complexity (i.e., the type of postnominal modifier) of the direct object noun phrase were both factors in determining particle placement. The particle movement rule might be optional, but the tendency for the rule to be applied varied with particular contexts.

Both Tara (1960) and Yassin (1981) claimed that "long" direct objects could come only after the particle, thus supporting the above authors' views.

The Given-New Principle

Although Kruisinga (1925) considered the end-position of noun objects to be the regular order with verb-particle combinations, he suggested that mid-position was also frequent. The chief cause for mid-object position was lack of stress. When a noun object was mentioned for the first time, it occupied end position and was fully stressed. When the object noun had been previously mentioned, it occupied mid-position as did pronominal words like "things" and "matter." However, only some of the compound verbs allowed mid-position of nominal objects; others, especially figurative combinations, never permitted it.

Poutsma (1928) suggested that when the notion expressed by the adverb (particle) was more prominent in the speaker's mind than that of the preceeding object, the adverb was mentioned after the object. This V-OBJ-ADV ordering was especially noticeable when the notion expressed by the adverb could be contrasted with that of another adverb, "In letting his nephew out, he had let two other people in.", or when the object and adverb "...represented two notions that admit of being thought of separately" (p . 419). In many of these cases the adverb had its full local meaning. ("He quietly turned over the paper." and "He quietly turned the paper over.") He noted, however, that sometimes the arrangement seemed to be a matter of mere chance, while at other times the arrangement was practically fixed. In written or printed language, the adverb was objectionable in

pre-object position where it might be apprehended as a preposition.

Erades (1961) criticized both the "stress" and "object-length" theories as explanations for particle placement. "Stress" theory proponents had suggested that the noun (object) following the verb-particle combination was strongly stressed, whereas pronouns and semi-pronominal nouns normally had weak stress. However, pronouns that had strong stress and high intonation were regularly to be found in mid-position, as in "They can count me out." Erades found it unobjectionable to say, "I wish you'd take that ridiculous hat of yours off." thus undermining the "length" theory. Neither theory explained the acceptability of, "Take your hat off." or "Take off your hat." Erades eliminated figurative phrases with immutable word order from his discussion, choosing to deal only with constructions where the noun-object could occupy end as well as mid-position. He claimed that the principle governing particle placement was the "news value" that the idea denoted by the object had in the sentence. Those objects that had strong news value were placed in end position; those with weak value came between the verb and particle. Nouns normally do introduce new ideas; thus, objects tend to have end position. But when the idea has been mentioned shortly before, or the object refers to an idea under discussion and thus is already familiar to the hearer (reader), the corresponding object occupies mid-position. The actual noun does not need to have been

previously mentioned, it is enough that the situation should suggest it. Referring pronouns stand for nouns that have been mentioned before, or can be inferred from the circumstances. There is a correlation between the news value of the idea and the stress or length of the word that expresses it. A noun with no news value has weak stress and a pronoun which refers back to a noun tends to be short. "The familiarity of the word idea is the cause; the weak stress and shortness of the word representing it are the effect" (p. 59).

Bolinger (1971) suggested that there is a tendency for the particle to precede the noun phrase when the determiner is absent or indefinite. Chafe (1976) indicated that there was a strong interaction between the status "given" and the status "definite". He argued that there is a strong tendency for indefiniteness and newness to go together. By this convention, Bolinger's previous statement implied that a "new" noun phrase occupied end position. He also indicated that direct objects consisting of cover terms, such as "stuff" or "thing", or being of a predictable nature, tended to occur in mid-position. He argued, therefore, that the particle movement rule was not an optional transformation and that both alternative orders, V-PRT-NP and V-NP-PRT, must be attributed to some element of focus in the deep structure.

It is interesting to note that in many authors' examples of V-NP-PRT structures, the NP is of a definite or

given nature (see Chomsky (1957), Tara (1960), Smaby and Baldi (1981)).

C. Experimental Evidence

Various authors (Poutsma (1928), Live (1965), Strang (1968), Bolinger (1971), and Fraser (1976)) have conceded that opinions on the relative acceptability of different particle positions vary widely from speaker to speaker. A few researchers have endeavored to test speaker preference for alternative English structures such as V-PRT-NP and V-NP-PRT combinations. Their experimental studies are reviewed under the syntactic principle that each espouses, and the implications of their findings for particle positioning are discussed.

The Transformationalist Principle

Bock and Brewer (1974) employed sentences that allowed optional word orders, to test syntactic theories of sentence memory. If subjects recalled sentences in terms of their supposedly underlying syntactic entities, then untransformed (UT) entities would be recalled correctly more frequently than the transformed (T) versions. The respective UT and T forms of a "particle movement" pair employed in this study were "The hi-fi fanatic turned up the volume." and "The hi-fi fanatic turned the volume up." Bock and Brewer's study included six different types of optional word orders associated with different optional transformations. Each

type was represented by eight different sentence pairs. Declarative control sentences were used as a basis of comparison. The experimenter read each list of test sentences aloud, using normal intonation. The subjects were then required to complete a digit recall task before proceeding to record the sentences they had heard. Ordered cues, consisting of single noun phrases, were provided on subject answer sheets. Eighteen of the forty subjects who participated in the experiment also rated the sentence pairs, as a separate task. The order of the pairs and the order of the sentences within pairs were random in the written-rating task. The criterion for rating was which member of each pair "sounded better" or was more "natural". Correct, shifted (i.e., to the pair mate), omitted, and erroneous responses were all scored. Analyses of variance were carried out with both subjects and sentences as random effects. For particle movement, the percentage of correct recall responses was 53 in the UT version, and only 19 in the T version. A test of simple effects revealed that the difference between UT and T particle versions was significant, $F1(1, 21)=45.00$ (with subjects as a random effect), $F2(1, 7)=18.98$ (with items as a random effect) with significance at the $p<.005$ level. A similar analysis for shifts (4 for UT particle version, 36 for T version) revealed that the difference for particle movement was significant at the $p<.05$ level.

Each member of each "optional-transform" pair was classified as either preferred or non-preferred according to its percentage of subject ratings. For the particle movement sentence types, 71% of the subjects preferred the UT version for seven sentences and 29% preferred the T version for one.

The Derivational Theory of Complexity (Fodor and Garrett, 1967) asserted that the greater number of transformations that a sentence underwent, the more difficult it should be to process and remember. Thus UT sentences should be correctly recalled more frequently than T sentences. Particle movement sentences were recalled significantly more frequently in the UT version for both correct and shifted responses, thus presumably lending support to this theory. The preference data also revealed that a majority of subjects considered the V-PRT-NP construction to be the most natural.

The authors did not clarify whether or not they controlled for the definiteness of their direct object noun phrases. The only statement they made in this regard concerned the scoring of subject responses as correct if the exact words of the original sentence were retained "...in their presented order, with the exception of changes in...articles (definite/indefinite)" (p. 839). If direct object definiteness was not systematically controlled this factor might have biased their results. For instance, if a large number of indefinite direct objects was employed, the Given-New strategy would predict a V-PRT-NP preference for

the sentences which illustrated this type of definiteness. Because the verb-particle combinations had been previously heard, they would supposedly be regarded as given information whereas the indefinite direct object noun phrases would be regarded as new information. Thus, the usual Given-New sentential information distribution would motivate a V-PRT-NP ordering.

The Given-New Principle

Bock (1977) conducted an experiment to determine whether alternative surface structures were sensitive to the Given-New distinction. Given information was defined as information "...which the speaker treats as readily available to the hearer on the basis of their shared knowledge of the linguistic and extralinguistic context ..., new information ... is knowledge possessed by the speaker which is not shared by the hearer" (p. 723). Quirk *et al.* (1972) claimed that the optimal ordering of information in English sentences was a given-before-new arrangement. Bock hypothesized that the syntactic structures which subjects employed in answering questions designed to manipulate the givenness of target noun phrases would reflect the given-new information distinction.

While it is not entirely clear from her paper what Bock's procedures were, the following represents an attempt to summarize the methadology of this experiment. Bock designed 80 question-answer sets which were representative

of ten syntactic types. Two question lists and two corresponding sentence lists were randomly constructed from the above sets with the constraint that half of the sentences on each of the two sentence lists were appropriate for half of the questions on each question list; while the remaining half were inappropriate matches. Appropriateness was determined by the given-new information distribution of the test sentence. Related particle movement question-answer pairs are illustrated below.

Question: A husband and his wife were having an argument because he refused to do something. What was it?
Appropriate sentence: The husband refused to take out the garbage.
Inappropriate sentence: The husband refused to take the garbage out.
Question: The garbage had been piling up in the house for days. Why?
Appropriate sentence: The husband refused to take the garbage out.
Inappropriate sentence: The husband refused to take out the garbage.

Sixteen subjects were assigned to each of the four possible list combinations. The entire question list was read by the experimenter and was followed by a reading of the entire sentence list. Each question was then reread with pauses between in which the subjects recorded their answer to that question, based on the previous sentence list that they had heard. Correct, shifted, omitted, and erroneous responses were scored. Twenty-eight of the 64 subjects who participated in this study, also performed a forced-choice

rating task on the forty sentence pairs.

For particle movement sentence types, 58 subjects recalled the appropriate form correctly, while 27 responded with the inappropriate version. There were 11 shifted responses in the appropriate category, and 22 in the inappropriate. Analyses of variance revealed that there were significantly more correct responses for the appropriate sentences than the inappropriate for all syntactic types ($F1(1,63,)=245.9$, $F2(1,39)=58.9$, $p<.001$). There were also significantly more shifts in the inappropriate condition than the appropriate ($F1=237.5$, $F2=59.0$, $p<.001$). Preferred responses were correctly recalled significantly more frequently than nonpreferred ($F1=126.0$, $F2=17.6$, $p<.001$). However the actual sentences that were rated were not disclosed, making the latter result difficult to interpret. Bock's results support the hypothesis that given information tends to precede new information in English sentences, and that alternative sentence structures are used to accomplish this ordering. The significant preference effect suggests that subjects tend to use natural-sounding surface structures more frequently than less natural ones.

Smyth (1977) tested the hypothesis that in certain "motivating" contexts dative position was highly constrained, while in other "non-motivating" contexts it was not. Contextual motivation referred to the use of a device (i.e., word order) as a result of certain expectations developed in the context. Smyth suggested that the Given-New

ordering of sentential information was a motivating force in determining the relative order of direct and indirect object noun phrases. The existence of two object noun phrases within a sentence allowed for four information ordering possibilities: Given-Given, New-New, Given-New, and New-Given. When both the direct and indirect object noun phrases are given or new, their ordering is contextually unmotivated. However, if one object noun phrase is given, and the other new, the given-before-new strategy will promote a like ordering.

Subjects were read 24 passages of which 16 contained a target dative sentence. The targets were positioned at various locations in the passages. At certain timed intervals, the experimenter stopped and read three test sentences (i.e., one dative sentence and two distractors). The subjects indicated, in answer booklets, whether each test sentence was exactly as previously heard or if the wording had been changed in some way. They also assigned a confidence rating to each answer. Half the dative target passages contained a new direct object and given indirect object or vice-versa. The other half contained given-given or new-new orderings. At the completion of the task, subjects were asked whether any particular kind of sentence had "stood out". None reported noting that dative sentences had been frequently used. An analysis of variance was performed on the data and it was found that the kind of sentence employed (i.e., change of dative positions) was a

significant effect ($F(2,63)=24.87$, $p<.001$). The results indicated that a change in dative position was readily recognized in a motivating context but not in a non-motivating context. This "better" recognition for dative changes in motivating contexts can be regarded as evidence that speakers are aware of the information distribution within a discourse. The results thus suggest that dative position is governed by the Given-before-New information principle. Smyth predicted that particle position might be governed by this strategy as well. He concluded that the putative optional rule of Dative Movement must now be regarded as obligatory in certain specified contexts. A sentence-bound transformational theory could not delineate the information distribution of such contexts. A descriptive system was thus required to map contextual information onto syntactic form. Such an approach can be found in Baker (1976) and Prideaux(1979).

D. Motivation and Objectives for the Present Study

The primary motivation for this study was to convert general syntactic principles for particle placement, which had been advanced on intuitive grounds, into experimental hypotheses which could be tested. The Transformationalists' optional rule of particle movement predicts that particles can be freely positioned within a sentence with no loss of naturalness. The Structural Distance principle predicts that the further the particle is from its verb, the less

acceptable the sentence will be, while the Structural Complexity principle predicts that the more "complex" the NP construction that occurs between a verb and its particle, the less natural the sentence will appear. Finally, the Given-New principle predicts that a given-before-new ordering of particle and associated direct object will be regarded as the most natural sentence arrangement. It had been suggested that the Given or New status of noun phrases was not always identifiable in isolated sentences (Smyth et al, 1979), therefore two studies were designed to determine what, if any, syntactic principles operate in isolated sentences as opposed to those in extended contexts. Direct object noun phrases involving postnominal modifiers were employed in the Naturalness Study to test previous claims (e.g., Bolinger (1971); Fraser (1976)) for particle preference in "long", "complicated" sentences. "Short" object noun phrases were utilized in the Discourse Study to determine whether, in fact, it was only this type of structure that permitted optional particle placement.

Bock and Brewer (1974) concluded, as a result of their experimental study, that the untransformed V-PRT-NP sequence was preferred over the V-NP-PRT transform. The only example of a particle movement sentence pair they provided included a short, definite direct object NP. It was decided that the present study be extended to include both "short" and "long", definite and indefinite object noun phrases to compare with Bock and Brewer's findings. Bock (1977) and

Smyth *et al.* (1979) claimed that the results of their studies supported a Given-before-New ordering of sentential information which was applicable to particle positioning. Bock employed only four verb-particle sentence pairs in her study, and on the basis of this limited sample made a fairly sweeping generalization. Again, only one of her examples is illustrated (the object NP is also a "short" definite one) so one is left in doubt as to the actual verb-particle combinations involved. Various authors (Live (1965), Sroka (1972), and Fraser (1976)) have indicated that particular particles exhibit definite positional tendencies. Bock may have selected particles with strong directional force to support her Given-New claim. Smyth extrapolated from dative to particle positioning, without considering that factors such as ambiguity and idiomatiness might affect the latter type of structure. By utilizing the question-answer paradigm employed by both authors, the results of the Discourse Study (which included a greater number of verb-particle combinations than either of the above authors employed) can be directly compared to those obtained by Bock and Smyth.

Spencer (1973) clearly demonstrated that linguists' intuitions cannot be uncritically accepted as being basic to the speech community. The judgements of six well-known linguists concerning the acceptability of 150 sentences were compared with those of 43 introductory psychology students. In 73 out of the 150 sentences, subjects' judgements indicated unclear cases or an opposite categorization from

the linguists'. Spencer suggested that factors such as satiation may cause linguists' intuitions to diverge from those of the general population. The conflicting intuitions of the authors reviewed in this chapter indicate the need for a normative data base as to what constitutes acceptable English use of verb-particle combinations. Bolinger (1971) observed that, "No large-scale count of phrasal particles and verbs entering into phrasal combinations has been made so far as I know." (p. 175). A major aim of the present study is to assist in the establishment of just such a base.

III. The Experiments

A. Introduction

Given the varied and conflicting claims (reviewed in the previous chapter) as to what factors govern particle position, it is apparent that the empirical facts are still in need of clarification. That is, it still has not been empirically established what factor or factors actually govern particle placement under varying conditions. In order to address this question, two different experiments were carried out. In this chapter, these two experiments are described. The first experiment addressed the issue of the relative naturalness of various particle positions within isolated sentences. The second investigated verb-particle positions for sentences in a meaningful context.

B. Naturalness Study

Hypotheses

This experiment tested the following hypotheses:

Transformationalist Hypothesis (Ht): Either position of particle placement (V-PRT-NP or V-NP-PRT) is equally natural.

Structural Distance Hypothesis (Hsd): The closer the particle is to its verb, the more natural-sounding it will be judged to be.

Structural Complexity Hypothesis (Hsc): It is more natural to move a particle over a less complex structure

than over a more complex structure.

These hypotheses make competing predictions about the naturalness judgements that subjects will assign to various structures. With the following patterns as a basis for comparison, the predictions generated by each hypothesis can be established:

A. V-PRT-NP

B. V-NP-PRT

C. (V-PRT-NP) nominalized

D. (V-NP-PRT) nominalized

E. V-PRT-NP-PP

F. V-NP-PRT-PP

G. V-NP-PP-PRT

H. V-PRT-NP-RC

I. V-NP-PRT-RC

J. V-NP-RC-PRT

Chomsky's (1964) "A over A convention" of structural assignment allows for "light" and "heavy" noun phrases. A heavy noun phrase is one consisting of a noun phrase plus a following modifying structure such as a prepositional phrase or a relative clause (i.e., patterns E to J). A light noun phrase does not contain a postnominal modifier(i.e., patterns A to D). When this convention is adopted, Ht predicts that all the ten sentence patterns listed above will be judged as equally natural since they all consist of V-(PRT)-NP-(PRT) structures, and the putative optional transformation of particle movement is blind to the light

versus heavy noun phrase distinction.

The Structural Distance hypothesis predicts that sentence patterns with particles of equal distance from their verbs will be judged as having the same naturalness, regardless of the complexity of the structures that intervene. Therefore, both the V-PRT-NP-PP and V-PRT-NP-RC patterns will be judged as being more natural than either the V-NP-PRT-PP or V-NP-PRT-RC pattern. Moreover, the further a particle is from its verb, the less natural the structure will be.

The Structural Complexity hypothesis predicts that a pattern with the particle moved over a less complex structure will be judged as more natural than one with the particle moved over a more complex structure. Complexity, in this context, refers to the constituent(s) over which a particle is moved. Thus the order of constituent complexity would be 0 > light NP > PP > RC, since a light NP contains a noun plus prenominal modifiers, a PP contains a noun phrase plus preposition, and a relative clause contains a sentential structure which may include both a NP and a PP. Therefore, the pattern V-NP-PP-PRT is predicted to be more natural than the V-NP-RC-PRT patterns. In regard to "movement", the terms "unmoved" and "moved" are employed as a convenient descriptive device and do not imply a derivational theory of complexity with one structure (V-PRT-NP) underlying another (V-NP-PRT).

Table 3.1

Naturalness Study

Predictions of Hypotheses

Hypothesis	Prediction for Relative Naturalness
Ht	A=B=C=D=E=F=G=H=I=J
Hsd	A,C,E,H > B,D,F,I > G,J
Hsc	A,C,E,H > B,D,F,I > G > J

">" = is relatively more natural than

Table 3.1 summarizes the predictions of each hypothesis for the ten sentence types listed above.

Subjects

Sixty-four grade twelve students from an Edmonton high school participated in the experiment. Subjects were either seventeen or eighteen years of age, and consisted of 26 males and 38 females. All except 6 were native English speakers. Thirty-one were enrolled in an English matriculation course while 33 were in a non-matriculation equivalent.

Materials

All the verb-particle constructions included in this experiment were of the moveable variety (i.e., the placement of the particle before or after the direct object noun

phrase was permitted). A major proportion was selected from Fraser's (1976) representative listing of frequently encountered verb-particle combinations. A pilot study was conducted with thirty university undergraduate psychology students to test the conformity of their judgments to the replicates constructed for each type of sentence pattern. Those verb-particle constructions which were judged as nonrepresentative of a particular set were deleted and replaced by different tokens in the actual test experiment.

The sentences which framed the verb-particle constructions were controlled for definiteness, tense, and length. Subject noun phrases were either definite or proper[1] while direct object noun phrases included an equal number of definite and indefinite nouns. Verbs were constructed in the third person, past tense form. The 40 test sentences were grouped into three separate lists, with sentence length controlled for each list. The three lists were utilized to separate subject judgements of heavy versus light object noun phrases and simple versus nominalized verb-particle constructions.

List A: This list was composed of 24 sentences with four replicates of each of the following six patterns (the sentence numbers refer to Appendix A, List A):

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[1]The list which contained nominalized verb-particle constructions (List C) varied from the general pattern in allowing clefted subjects and verbs in present tense form.

Pattern E = V-PRT-NP-PP (sentence # 4, 7, 14, 21)

Pattern F = V-NP-PRT-PP (sentence # 1, 10, 18, 19)

Pattern G = V-NP-PP-PRT (sentence # 5, 8, 13, 24)

Pattern H = V-PRT-NP-RC (sentence # 2, 11, 17, 23)

Pattern I = V-NP-PRT-RC (sentence # 6, 9, 15, 22)

Pattern J = V-NP-RC-PRT (sentence # 3, 12, 16, 20)

Two direct object noun phrases were definite and two were indefinite in each set of replications. Sentence length was from 10 to 12 words.

List B: Eight sentences comprised this list, with four replicates of the following two patterns (The sentence numbers refer to Appendix A, List B):

Pattern A = V-PRT-NP (sentence # 1, 4, 6, 7)

Pattern B = V-NP-PRT (sentence # 2, 3, 5, 8)

Two direct object noun phrases were indefinite and two were definite in each set of replicates. Sentence length ranged from five to eight words.

List C: The eight sentences in this list followed the same design as List B, and illustrated the following patterns (the sentence numbers refer to Appendix A, List C):

Pattern C = (V-PRT-NP) nominalized form (sentence # 2, 4, 6, 8)

Pattern D = (V-NP-PRT) nominalized form (sentence # 1, 3, 5, 7)

Sentence length varied from eight to eleven words.

Sentences in both lists B and C were representative selections from the Discourse Study (discussed in Section C

below). Slight revisions in these sentences were necessary to ensure their naturalness as isolated sentences. In particular, those sentences headed by personal pronouns in the Discourse Study were revised to contain an appropriate proper noun. (The stimulus sentences are found in Appendix A.)

The order of sentences was randomized within each list. The three lists were printed in individual subject booklets. Thirty-two subjects received booklets that contained an A-B-C order of presentation, while the remaining 32 received an A-C-B order. Because of the greater number and complexity of its sentences, list A was always presented first.

Procedure

Each booklet contained a set of written instructions. Subjects were asked to rate the sentences in each list on a nine-point scale, with "9" being a very natural and "1" being a very unnatural-sounding sentence. Before the sentences in each list were rated individually, subjects were directed to anchor their scale. They read through the entire list to find the most natural-sounding sentence, which they rated as a "9". The same list was then reread and the most unnatural or awkward sentence was rated with a "1". (The instructions are reproduced in Appendix A.) Each list was anchored and rated separately. Subjects were given as much time as they required, with short breaks between lists. All three lists were completed in one session. At the end of

the session, subjects were instructed to note any observations they may have had concerning the nature of the stimuli that they were asked to rate. The entire session took approximately 45 minutes. An analysis and discussion of the data collected from this experiment follows in Chapter IV.

C. Discourse Study

Hypotheses

This experiment evaluated the following hypotheses:

Given-New Hypothesis(Hgn): A sentence will be judged as more natural when the verb-particle and associated direct object noun phrase are ordered so that given information precedes new information.

Structural Distance Hypothesis(Hsd): The closer a particle is to its verb, the more natural-sounding it will be judged to be.

In this study, only the verb-particle and direct object noun phrase constructions were varied as given or new information. Subject noun phrases were always given and therefore were not a factor under consideration. The following patterns of Given-New information distribution were examined in this experiment:

1. Given V-PRT/Given NP
2. Given V-PRT/New NP
3. New V-PRT/Given NP
4. New V-PRT/New NP

According to the Given-New discourse strategy, the Given-New and New-Given information structures of pattern 2 and 3 motivate a preferred particle position. For pattern 2, Hgn predicts that the more natural particle position will be immediately after the verb. For pattern 3, it predicts that the particle will be judged as more natural if it occurs after the direct object noun phrase. The Given-Given and New-New structures of pattern 1 and 4 provide no contextual motivation for particle preference. That is, Hgn is silent as to which form, moved or unmoved, is expected here.

The syntactic strategies proposed for sentences in isolation (i.e., The Naturalness Study) were Ht, Hsd, and Hsc. If each of the four hypotheses are examined with respect to the stimuli tested in the Discourse Study, a set of predictions can be attained. Table 3.2 summarizes the predictions of the hypotheses for moved or unmoved particle preference within the four Given-New information structures tested.

The Transformationalist hypothesis predicts that the unmoved and moved particle forms will be judged as equally natural, regardless of the information pattern involved. For all four patterns, both Hsd and Hsc predict that the closer a particle is to its verb, the more natural the sentence will be judged. The Discourse Study utilizes only light noun phrases. The prediction of Hsc is that an unmoved particle will be judged as more natural than a particle moved over a noun phrase. The Structural Complexity hypothesis thus

Table 3.2

Discourse Study

Predictions of Hypotheses

INFORMATION PATTERN	HYPOTHESES			
	Hgn	Hsd	Hsc	Ht
1. Given-Given	-	UM>M	UM>M	UM=M
2. Given-New	UM>M	UM>M	UM>M	UM=M
3. New-Given	M>UM	UM>M	UM>M	UM=M
4. New-New	-	UM>M	UM>M	UM=M

">"= is relatively more natural than
"UM"= unmoved particle position
"M"= moved particle position

reduces to a Structural Distance hypothesis in this study. Accordingly, Hsd is the most conservative hypothesis, and by establishing this hypothesis as the basis of prediction for patterns 1 and 4, subject naturalness judgements will either support or reject Ht as an alternative explanation.

It should be noted that pattern 3 was the crucial one, since it was the only pattern where Hgn and Hsd yielded different predictions as to naturalness.

Subjects

Fifty-six[2] of the original subject group participated in this study. Of the 24 males and 32 females, only 6 subjects were non-native English speakers.

Materials

Eight short discourses were constructed, with careful controls on what information was given in each paragraph. Two discourses replicated each of the following information patterns:

Pattern 1 = Given V-PRT/Given NP

Pattern 2 = Given V-PRT/New NP

Pattern 3 = New V-PRT/Given NP

Pattern 4 = New V-PRT/New NP

Each discourse was followed by two wh-questions which were designed to focus the subject's attention on what information had or had not been provided in the preceding paragraph. Each wh-question was followed by a set of two possible answers which differed only in the placement of the particle (either immediately after the verb or after the direct object noun phrase). One set of answers contained verb-particle constructions in simple sentences (i.e., "He figured the message out.") while the other contained the verb-particle structures in nominalized forms (i.e., "He used his code book to figure the message out.").

---

[2]A reduced number of students participated in the Discourse Study because of school field trips and resulting scheduling problems which occurred during the testing period.

The order of both the wh-questions and corresponding answer sets was randomized throughout the study.

Procedure

The Discourse Study was conducted during the week following the Naturalness Study. Subjects were provided with individual booklets containing a set of instructions, the eight discourses, and corresponding question-answer sets. Subjects were asked to rank each set of possible answers according to the following scale:

1 = most preferred response

2 = least preferred response.

A short practice session was undertaken to familiarize subjects with the experimental task. A sample discourse was read and subjects ranked the two possible answers to the wh-questions relevant to that discourse. The practice task did not involve verb-particle constructions. (See Appendix B for the practice task, the instructions, and the actual test items used in the Discourse Study).

Subjects then proceeded to rank the 16 test sentence sets, using as much time as they needed to complete the task. The combined practice-test session took approximately 30 minutes. Chapter IV contains an analysis and discussion of the results of this experiment.

IV. Results and Discussion

A. Introduction

Statistical tests were conducted to analyze the data collected from both the Naturalness and Discourse experiments. In this chapter, the statistical results obtained from each experiment are evaluated according to the hypotheses proposed for that experiment. The chapter concludes with a summary of the findings regarding the naturalness of various particle positions in contextually motivated and unmotivated sentences.

B. Naturalness Study

The 40 test sentences were unscrambled and reordered according to pattern type. Raw scores were then standardized and transformed to a scale (Ferguson, 1976) with a common mean of 5 and a constant standard deviation of 2 for all subjects.

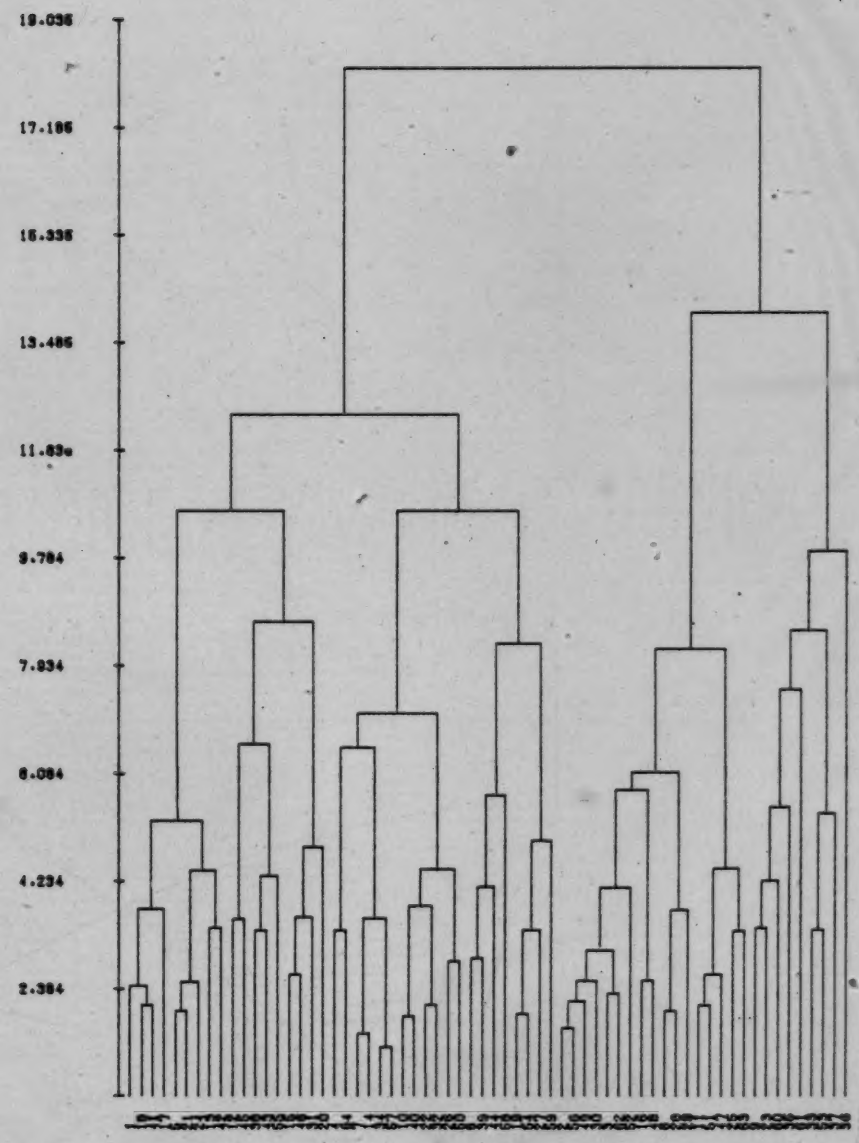
Results of CLUSTAN

Since the original subject pool was composed of both matriculation and nonmatriculation students with a few students having identified themselves as non-native speakers, it was decided that the data should be analyzed to determine whether the subjects were responding as representing more than one population. Johnson's hierarchial clustering program (Johnson, 1967) utilizes a distance measure between subjects' ratings of particular test items

to group individuals into increasingly larger clusters, and finally terminates when all the subjects have been grouped into one large cluster. A graphic representation of the hierarchial clustering solution that resulted from the application of this program is found in Figure 4.1. The vertical values on the left-hand side of Figure 4.1 indicate the level at which a set of subjects were clustered together. These values indicate the similarity with which subjects rated the stimulus sentences. The numbers displayed horizontally at the bottom of the graph indicate individual subject codes. The code numbers of the subjects are not presented in sequence in this figure. General guidelines can be followed to determine how many clusters are represented in a CLUSTAN plot. Multiplying the upper limit of the rating scale (i.e., 9 for this experiment) by twice its value provides a conservative estimate of the lowest point at which two distinct clusters can be said to exist. By means of this general estimation, two potential clusters were proposed: Cluster 1, consisting of 38 subjects (Subjects 1 to 59 in Figure 4.1) and Cluster 2, including the remaining 26 subjects.

To determine how distinct each proposed cluster was from all the "objects" outside of it, a cluster cohesion statistic was calculated. In the formula 1-(I/M), the Inner Distance (I) represents the mean distance between objects within a cluster and the Middle Distance (M) represents the mean distance between each of the objects in a cluster and

Figure 4.1



SUBJECT PROFILE ANALYSIS: NATURALNESS DATA

all of the objects outside of it (Baker, personal communication). A cohesion score approaching 1 would indicate a very cohesive, distinct cluster; while a score approaching 0 would indicate the opposite condition. The cohesion scores calculated for Cluster 1 and Cluster 2 were 0.110 and 0.063 respectively.

These scores indicate that the proposed clusters were not distinct enough from one another to regard the subjects as representing more than one population in their response to this experimental task. Consequently, all subjects were treated as belonging to a single group.

Results of ANOVAR

An analysis of variance was performed on the standardized rating scores to investigate the effects of sentence type and definiteness and possible interactions between these factors. The experimental design was a two-way analysis of variance with repeated measures and replications. Sixty-four subjects (S) rated the naturalness of sentence types with varied particle positions. All ten sentence types (see Chapter III, Section B) were included in the same analysis. Each type (T) was represented by four replicates (R) - two with indefinite and two with definite direct object noun phrases (D). The results of the analysis of variance are found in Table 4.1.

Sentence type and definiteness factors were both significant as was the interaction between the two ($p<.001$).

Table 4.1

Naturalness Study

Analysis of Variance

Source	Sum of Squares	Degrees of Freedom	Mean Square	F Score
T	2137.375	9	237.486	98.058**
D	15.625	1	15.625	7.578*
T x D	438.906	9	48.767	20.138**
R	1.500	1	1.500	0.541
S	25.660	63	0.407	
T x S	1373.215	567	2.422	
D x S	129.891	63	2.062	
T x D x S	1373.109	567	2.422	
Residual	4043.499	1279	3.161	

"**"= significance at the .001 level
"*"= significance at the .01 level
"T"= sentence type
"D"= definiteness
"R"= replicates
"S"= subjects

Type by Definiteness Interaction

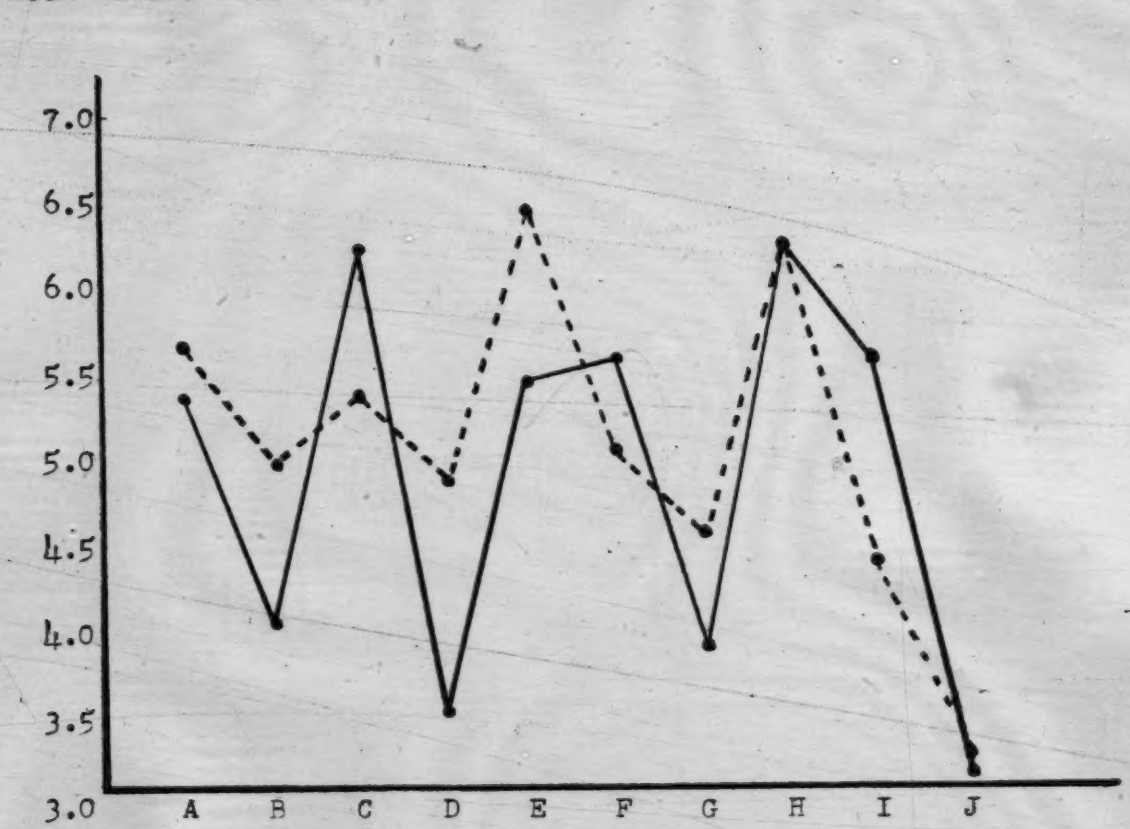
The interaction between type and definiteness is illustrated in Figure 4.2.

This graph suggests that for certain sentence types (i.e., Patterns B,D,E,G) definite direct object noun phrases were preferred, whereas for other sentence types (C,F,I) the preference was for indefinite objects. To determine whether all the replicates of a particular pattern supported the

Figure 4.2

Naturalness Study

Type by Definiteness Interaction



Pattern Types

A=V-PRT-NP
B=V-NP-PRT
C=(V-PRT-NP)nom
D=(V-NP-PRT)nom
E=V-PRT-NP-PP
F=V-NP-PRT-PP
G=V-NP-PP-PRT
H=V-PRT-NP-RC
I=V-NP-PRT-RC
J=V-NP-RC-PRT

"--"= Definite direct object NP
"—"= Indefinite direct object NP

definiteness trend, or whether there were discrepancies among replicates, a Type by Definiteness by Replicate table of mean scores was constructed.

Table 4.2 illustrates that when both replicates of a definiteness type are compared with the alternative set, many discrepancies are evident. For example, within pattern F the indefinite replicates have similar mean scores of 5.531 and 5.875, but the definite replicates differ substantially in their mean scores. Definite replicate 1 has a mean of 6.5 (which is higher than either of the indefinite replicates) while replicate 2 has a mean of only 3.734. Only two of the ten sentence patterns display any consistency in the relative magnitude of mean scores for the replicates of a definiteness type. These are patterns G and I, and even within these sentence patterns a fair degree of variation is noted among the mean scores. The obvious conclusion is that the significant type by definiteness interaction is due to definiteness replicates which are not in fact functioning as replicates. Extraneous factors must be causing the variation exhibited within the replicates of a definiteness type. The test sentences that deviated from the general scores assigned to their pattern type will now be examined.

1. Pattern C, Definite Replicate 2. "The warden found it easy to draw in the hiking trails."

Without any explanatory context, it is ambiguous as to whether "draw in" is a V+PREP or a V+PRT combination.

Table 4.2

Naturalness Study

Sentence Type by Definiteness by Replicates

Sentence Pattern	Indefinite		Definite	
	R1	R2	R1	R2
A	5.172	5.594	5.578	5.813
B	3.797	4.422	5.609	4.375
C	6.594	6.094	6.000	4.813
D	2.672	4.453	5.516	4.297
E	4.719	6.250	5.922	7.063
F	5.531	5.875	6.500	3.734
G	3.594	4.109	4.250	4.859
H	6.484	6.156	6.469	6.109
I	5.688	5.781	3.359	5.531
J	3.000	3.359	3.969	2.703

All numbers represented are mean scores.

Subjects who were undecided as to which reading to assign this sentence, may have chosen to rate it as lower in naturalness than the other pattern members.

2. Pattern D, Indefinite Replicate 1. "It pleased Sue for Albert to bring a memento over."

In this clefted sentence the grammatical subject ("it") does not equal the logical subject ("for Albert to bring a memento over"). Compared to the other replicates of that verb-particle pattern (i.e.,"Stanley used his code-book to figure the message out.") this sentence contains fairly formal, stilted syntax. It is not surprising, therefore, that subjects rated this sentence as more unnatural sounding than other replicates.

3. Pattern F, Definite Replicate 2. "The Donaldsons took

their new car back with faulty tires."

With the particle in its present position, the sentence means either that (a) the new car was sold with faulty tires and therefore was returned, or (b) the new car was returned (i.e., for a warranty check) with different tires which were faulty. (i.e., the Donaldsons had replaced the original tires). Bolinger (1971) states that ambiguity is a factor in determining whether a particle is acceptable in mid-position. Accordingly subjects may have rated this obviously ambiguous sentence as less natural.

4. Pattern I, Definite Replicate 1. "Mother did the bedroom over that the baby is to occupy."

When the particle is placed immediately after the verb (i.e., "did over the bedroom") the object noun phrase is the focus of concern. If the particle is positioned after the direct object (i.e., "did the bedroom over") the repeated action is focused. A relative clause associated with the direct object noun phrase "loses" its referent as the focus shifts from the noun being modified to the action of the verb. The stereotyped meaning of "remodel" is more frequent when the particle is next to the verb and the nonstereotyped when the two are separated. This verb-particle combination may have become fossilized in its stereotyped form. The other verb-particle constructions included in pattern I,"brought about", "made up", and "tried out", do not exhibit a corresponding shift in meaning when the particle is placed in mid-position and thus were judged as more

natural-sounding.

If the verb-particle and associated direct object constructions of the Naturalness Study are analyzed for Given-New information, two types of structures can be discerned, namely New V-PRT/Given NP and New V-PRT/New NP. Because the verb-particle combinations had not been previously mentioned, they were likely considered as new information. Definite and Indefinite direct object noun phrases were regarded as given and new information respectively (Hawkins, 1978). According to Hgn, only the sentences containing a definite (given) object noun phrase would provide motivation for a preferred particle position; indefinite (new) object noun phrases would be neutral to this strategy as both the verb-particle combination and direct object would be new. Of the patterns in which a definite direct object noun phrase was preferred (B, D, E, G), only pattern E did not contain a moved particle. This suggests that subjects prefer a particle to be moved over a definite direct object rather than an indefinite one. In pattern E, the object noun phrase is not in final = new position. Subject preference for a definite noun phrase in next-to-last position may be indicative of a general given-before-new ordering of the entire sentential content. In all the patterns where an indefinite object noun phrase was preferred (C, F, I), the particle did not occupy final = new position therefore it is difficult to assess what information status subjects assigned to it. Statements

concerning the assignment of given or new status to constructions in isolated sentences must be tentative at best as extralinguistic factors such as individual subject's background knowledge may easily "contaminate" the news value of a supposedly controlled sentential ordering.

Results of Planned Comparisons

To determine whether certain syntactic patterns were judged as being more natural than others, planned comparisons were conducted on the means for each pattern type. The following results were obtained:

1. Sentence types in which the particle occurred immediately after the verb (unmoved) were judged as significantly more natural than those in which the particle was positioned after a direct object noun phrase, or a post nominal structure such as a prepositional phrase or a relative clause (moved) ($F(9,255)=547.48$ $p<.01$).

2. Within unmoved sentence types, patterns E and H, which contained postnominal modifiers, were judged as being significantly more natural than patterns A and C which did not ($F(3,255)=20.42$ $p<.01$). This finding may actually be an artifact of the experimental design, a possibility that will be discussed further in this chapter.

3. Within moved sentence types, pattern J, in which the particle occurred in sentence final position following a relative clause, was judged as significantly less natural than the other five moved pattern types F,I,B,D and G

($F(5,255)=82.54$ $p<.01$).

4. Within the moved sentence types F,I,B,D,G, patterns F and I, in which the particle was positioned after the direct object noun phrase and followed by a postnominal modifier, were judged as being significantly more natural than patterns B and D, which had the same particle position but no postnominal modifier, or G in which the particle followed a prepositional phrase ($F(4,255)= 107.51$ $p<.01$). Patterns B, D and G all contained particles in sentence final position whereas patterns F and I did not. Subjects who judged patterns F and I to be more natural than patterns B and D may have adopted the strategy of assigning a lower score to sentences with particles "stranded" in final position than to those in which "something else" followed the particle. It is also possible that the F,I > B,D finding is due to the experimental design.

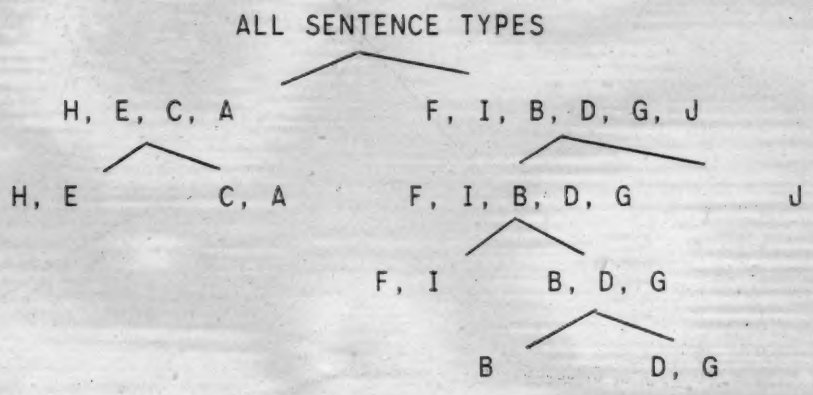
5. Within sentence types B,D and G, pattern B was judged to be significantly more natural than patterns D or G ($F(2,255)=7.79$ $p<.01$). Figure 4.3 is a structural interpretation of the above findings. Means are ordered from left to right in decreasing magnitude of naturalness judgements.

This experiment was administered as three separate lists. List A, which contained heavy noun phrases, was anchored and rated separately as were Lists B and C, both of which contained light noun phrases. Because subjects used a nine-point scale to rate all three lists, they were in

Figure 4.3

Naturalness Study

Relative Naturalness of Sentence Patterns



Sentence Pattern Types

H = V-PRT-NP-RC
E = V-PRT-NP-PP
C = (V-PRT-NP)nom
A = V-PRT-NP

F = V-NP-PRT-PP
I = V-NP-PRT-RC
B = V-NP-PRT
D = (V-NP-PRT)nom
G = V-NP-PP-PRT
J = V-NP-RC-PRT

effect forced to make finer distinctions for Lists B and C which contained fewer items and no postnominal structures. As one subject noted,"The first group of sentences (List A) had more phrases or ideas to them, therefore it was easier to rank them."

Subsequent discussion, therefore, will compare patterns A to D as a set distinct from patterns E to J. If the light noun phrase patterns are extracted from Figure 4.3, the ordering of patterns, from most to least natural is C,A > B > D. In structures containing no postnominal modifiers, an

unmoved particle position (patterns C and A) was judged as significantly more natural than a moved position (patterns B and D). Whether the particle was in a simple or nominalized form did not make a significant difference for the unmoved particle patterns but apparently did make a difference for the moved particle patterns. In the latter case simple forms were preferred over nominalized ones. There is no obvious explanation for this result other than the possibility that one or two of the tokens may have caused the significant difference in judgements. The *F* score reported for the B > D,G comparison was 8.39 which, although significant at the .01 level, was not nearly as large as that reported for other comparisons.

For the heavy noun phrase patterns (E through J) the order of difficulty was H,E > F,I > G > J. It is evident that the closer the particle was to its verb, the more natural the sentence was judged to be. Pattern J (V-NP-RC-PRT) was judged as significantly less natural than pattern G (V-NP-PP-PRT) even though the particle occupied sentence final position in both types of structures. The *F* score for this comparison was highly significant ($F=196.67$), therefore it was unlikely that one or two anomalous items caused this effect. Table 4.3 presents the predictions of the syntactic hypotheses (see Chapter III, Table 3.1) partitioned into light and heavy noun phrases.

The results of the planned comparisons will now be examined with respect to the hypotheses for light and heavy

Table 4.3

Naturalness Study

Predictions of Hypotheses

Hypotheses	Predictions for Relative Naturalness	
	Light NP	Heavy NP
Ht	A=B=C=D	E=F=G=H=I=J
Hsd	A,C > B,D	E,H > F,I > G,J
Hsc	A,C > B,D	E,H > F,I > G > J

">"= is relatively more natural than

noun phrases. The Transformationalist hypothesis was rejected by the data, since subjects judged V-PRT-NP patterns as significantly more natural than V-NP-PRT patterns for both light and heavy noun phrases.

The Structural Distance hypothesis was supported by the significant preference of subjects for an unmoved over moved particle position. A particle moved over one structure was judged as more natural than a particle moved over two. However, this hypothesis predicted that the patterns V-NP-PP-PRT and V-NP-RC-PRT would be equally preferred, when in fact subjects significantly preferred the former pattern to the latter.

The difference between patterns G and J is one of structural complexity in the postnominal modifier. The Structural Complexity hypothesis did predict a V-NP-PP-PRT >

V-NP-RC-PRT naturalness ordering and therefore was supported by the data. The Structural Complexity hypothesis did not predict a V-NP-PRT> (V-NP-PRT)nominalized preference. However, "nominalized" verb-particle sentences tended on the whole to contain more complicated syntax than simple verb-particle sentences, a factor which might have contributed to the result that simple structures were judged more natural than nominalized structures. The fact that this result was not sustained for both V-PRT-NP and V-NP-PRT structures undermines its generality and makes it rather suspect.

In summary, Ht was rejected completely, Hsd was rejected in part and Hsc was accepted with some qualifications. That is, both the factors of structural distance and structural complexity play a role in the naturalness judgements. It should be noted that the position of the particle in the V-NP-RC-PRT pattern also violates the Anti-Interruption strategy (Slobin, 1973) by causing the relative clause to interrupt the main clause (i.e.,"The policeman moved a spectator who stopped to view the accident along."). Normally, sentences seem to be planned so that a relative clause occurs in sentence initial or final position in order not to interrupt the main clause, which usually contains the basic communicative substance. The violation of this sentence-planning strategy might have contributed to the significant difference between V-NP-PP-PRT and V-NP-RC-PRT patterns. As Bolinger (1971) stated,"I have

presented relative clauses as affecting phrasal verbs when the better focus may be how phrasal verbs affect relative clauses." Patterns B,D and G,J, which all contained particles in sentence final position, received the lowest naturalness scores of their respective sets. This result may reflect the formal grammatical instruction that subjects have received, and in particular, the prescriptive injunction that a sentence should not end with a preposition. Some of the subjects' comments received at the end of the testing session lend support to this conclusion. Two typical examples were:

> "There were a lot of sentences where the words should have gone with the verb, but instead had been put at the end of the sentence".
>
> "Some of the sentences didn't seem to be finished off".

C. Discourse Study

Test sentences were first reordered according to their information pattern type. Raw scores were then converted to "prediction" scores, using the following scale:

0 = subject responded in the manner predicted

1 = subject did not respond in the manner predicted

Predictions were based on the Given-New and Structural Distance hypotheses (see Chapter III, Table 3.2).

Results of CLUSTAN

The binary prediction scores were converted into distance measures between subjects' in their response to test items (subject matrix), and between the test items themselves in terms of overall subject response (object matrix).

Johnson's hierarchial clustering program (described in Section B) was first applied to the subject matrix of distance scores. A graphic representation of the clustering solution that resulted is found in Figure 4.4.
The highest level at which a set of subjects clustered together was only .877, indicating that the 56 subjects who participated in this study functioned as a single group in their response to the experimental task.

The hierarchial clustering program was then applied to the corresponding object matrix. Figure 4.5 illustrates the resulting clustering solution.
The letter-number code displayed horizontally at the bottom of the page indicates the structural assignment of each individual test sentence. The code reads as follows:

PT = information pattern

UM or M = unmoved or moved particle position

S or N = simple or nominalized verb-particle structure

R = replicate

Thus PT1UMSR1 is to be interpreted as an information pattern 1 (Given-Given) sentence containing an unmoved verb-particle construction in simple form, and comprising replicate 1 of

Figure 4.4

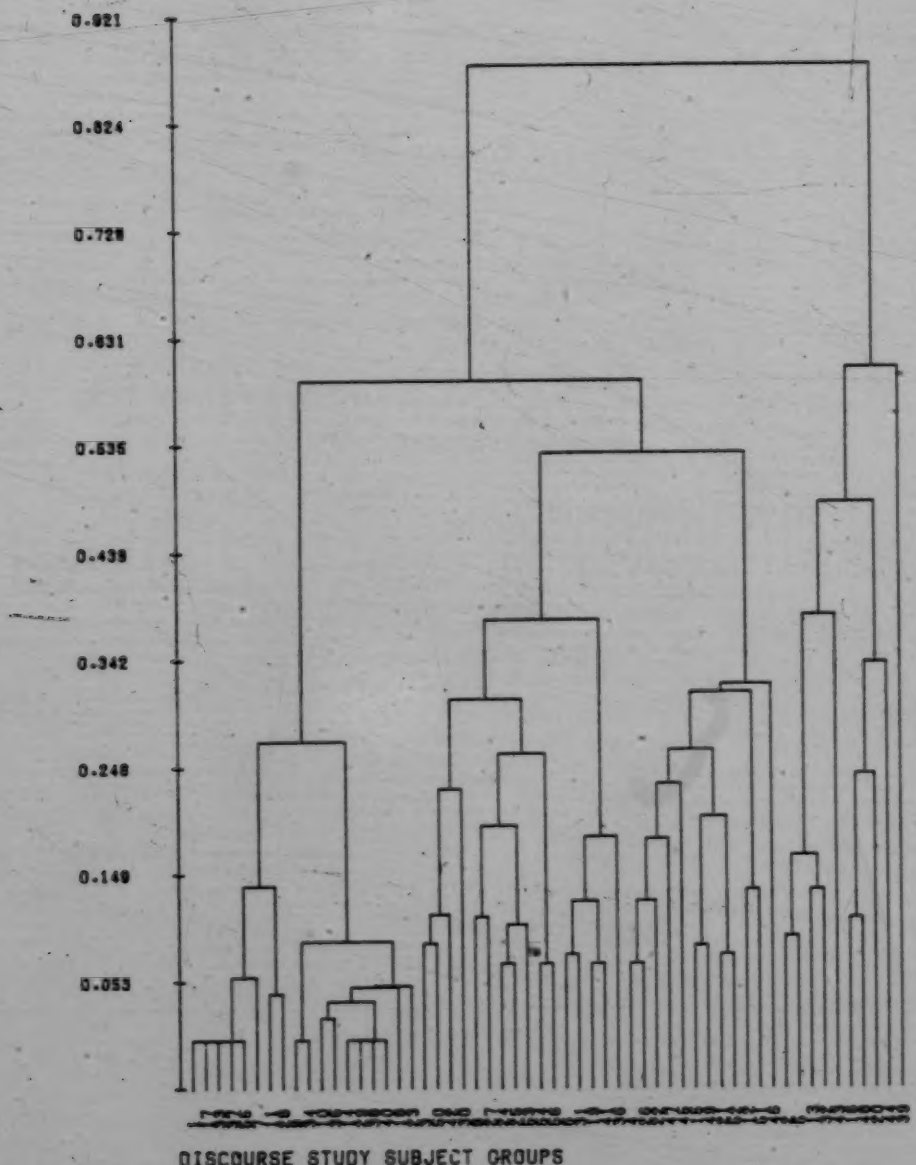
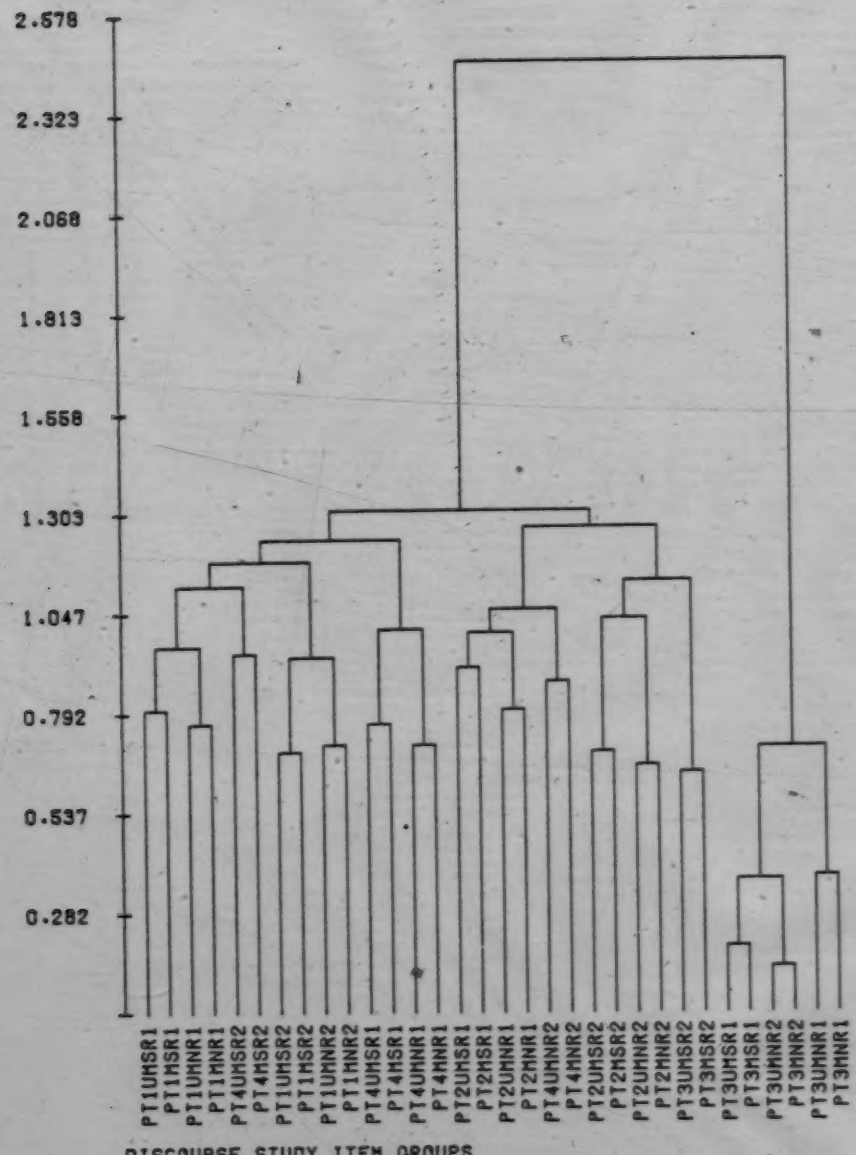

0.821
0.824
0.728
0.631
0.535
0.439
0.342
0.248
0.149
0.053
DISCOURSE STUDY SUBJECT GROUPS

Figure 4.5


2.578
2.323
2.068
1.813
1.558
1.303
1.047
0.792
0.537
0.282
PT1UMSR1
PT1MSR1
PT1UMNR1
PT1MNR1
PT4UMSR2
PT4MSR2
PT1UMSR2
PT1MSR2
PT1UMNR2
PT1MNR2
PT4UMSR1
PT4MSR1
PT4UMNR1
PT4MNR1
PT2UMSR1
PT2MSR1
PT2UMNR1
PT2MNR1
PT4UMNR2
PT4MNR2
PT2UMSR2
PT2MSR2
PT2UMNR2
PT2MNR2
PT3UMSR2
PT3MSR2
PT3UMSR1
PT3MSR1
PT3UMNR2
PT3MNR2
PT3UMNR1
PT3MNR1
DISCOURSE STUDY ITEM GROUPS

this particular combination. In Figure 4.5, sentence codes are not arranged in order of pattern numbers.

Figure 4.5 reveals that two distinct clusters of test objects existed. Cluster 1 includes sentences from PT1UMSR1 to PT3MSR2 inclusive, a total of 26 items. Cluster 2 contains the remaining 6 sentences. Cluster 1 items are linked at fairly high levels while Cluster 2 items are linked much lower. To aid in the interpretation of the object clusters, cohesion scores were calculated (see Section B). The resulting scores were -0.096 (which is essentially 0) for Cluster 1 and 0.579 for Cluster 2. Subjects apparently exhibited a fair degree of variation in their response to Cluster 1 test items, whereas they were somewhat more consistent in their reaction to Cluster 2 items.

Chi-square tests were conducted to compare the observed with expected frequencies of the predicted scores for each test pattern. Table 4.4 displays total frequency counts and chi-square values for the pattern items that formed each cluster.

If the subjects were responding in a random fashion, the null hypothesis predicts that half the total number would prefer an unmoved particle position and half a moved position for each information pattern involved. The predicted response to Cluster 1 items was significantly greater, and significantly less for Cluster 2 items than chance alone would predict. Cluster 1 contained only one

Table 4.4

Discourse Study

Prediction Score Frequency Chart

Cluster 1 Items

Pattern	Prediction	NCP	NNP	Chi-Sq Value	P Level
1	UM>M	334	114	108.04	p<.001
2	UM>M	344	104	128.57	p<.001
3	M>UM	72	40	9.14	p<.01
4	UM>M	370	78	190.32	p<.001

Cluster 2 Items

Pattern	Prediction	NCP	NNP	Chi-Sq Value	P Level
3	UM>M	80	256	92.19	p<.001

"NCP"= number of responses corresponding to prediction
"NNP"= number of responses not corresponding to prediction

pair of pattern 3 items which statistically supported the M > UM prediction of Hgn - "He burned (down) the warehouse (down)." One can merely speculate as to why this particular pair deviated from the UM > M preference that other members of the pattern displayed. "Burn" is a middle-voice verb and therefore it may combine with the particle "down" in the intransitive as well (e.g.,"The house burned down."). The other verb-particle members of this pattern can not be made intransitive without being placed in the passive. In its

intransitive form, "burn down" frequently occupies sentence final position, thus it is plausible that subjects may regard this as a natural position for that particular combination. One might argue that the mention of "arsonist" in the preceding Discourse paragraph would by definition render the verb "burned" given and therefore only the particle "down" is truly new in this particular discourse. The preference of a significant number of subjects for "down" in a sentence final position would then constitute an argument in favor of the Given-New strategy. When combined with the verb "burned", "down" also reveals the extent of the burning (i.e., total destruction) as opposed to the single word "burned" which leaves one in doubt as to the amount of damage caused. The other particles included in this pattern may not be providing as much added information as "down" and therefore are not as naturally able to undergo sentence final focus. For instance, in the combinations "draw in" and "map out" the particle occupies a somewhat redundant role. As one student noted,"Some sentences ended abruptly with 'up', 'out', 'on' etc. and in many cases they were not even needed."

Except for one set of pattern 3 sentences (UM/MSR2) the clusters break neatly into the following patterns:

Cluster 1 = Patterns 1, 2, 4

Cluster 2 = Pattern 3

Pattern 3 was the only pattern that predicted a M > UM particle preference and it was the only pattern which

Table 4.5

Prediction Percentages

Discourse Study

Information Pattern	Prediction	% of Subjects Equal to Prediction R1	R2
Given V-PRT/Given NP	UM>M		
Simple		80.4	69.6
Nominalized		76.8	71.4
Given V-PRT/New NP	UM>M		
Simple		91.1	69.6
Nominalized		80.4	66.1
New V-PRT/Given NP	M>UM		
Simple		19.6	64.3
Nominalized		37.5	14.3
New V-PRT/New NP	UM>M		
Simple		76.8	94.6
Nominalized		71.4	87.5

"R"= replicate
"M"= moved particle position
"UM"= unmoved particle position

exhibited conflicting results. Table 4.5 indicates the percentage of subjects who responded in the manner predicted for each stimulus set of the four information patterns tested. Table 4.6 lists the actual sentences analyzed in Table 4.5. The results are discussed separately for each pattern.

Pattern 1. According to the prediction of the Structural Distance hypothesis, a majority (over 50%) of the subjects preferred an unmoved over moved particle position for both replicate sets of the simple and nominalized

Table 4.6

Discourse Study

Test Items

Information Pattern	Replicate 1	Replicate 2
Given-Given		
Simple	She looked (up) the number (up).	He figured (out) the message (out).
Nominalized	It alleviated her fears to look (up) the phone number (up).	He used his code book to figure the message (out).
Given-New		
Simple	He handed (over) a revised will (over).	He had also brought (over) a photo album (over).
Nominalized	It would cause family strife to hand (over) a revised will (over).	It pleased Sue for Albert to bring a memento (over).
New-Given		
Simple	He mapped (out) the hiking area (out).	He burned (down) the warehouse (down).
Nominalized	He found it easy to draw (in) the hiking trails (in).(up).	They planned to return and pick (up) the loot
New-New		
Simple	He passed (on) a secret (on).	He picked (up) a flashy tie (up).
Nominalized	It was the informant's job to bring (back) information (back).	He wanted to try (on) a new suit (on).

versions of this pattern. There was a fair degree of variation between replicates of a simple or a nominalized

form. For SR1, 80.4% of the subjects responded as predicted while for SR2 only 69.6% did. .

Pattern 2. As predicted by the Given-New hypothesis, an unmoved particle position was preferred by a majority of the subjects. Again, variation was noted among the replicates (SR1=91.1% whereas SR2=69.6%).

Pattern 3. This pattern yielded conflicting results. Only 19.6% of the subjects preferred the Hgn M > UM predicted position for SR1 but 64.3% preferred this position for SR2. Within the nominalized forms, both replicates received less than 50% subject preference for the M > UM particle position, although R1 shows substantially more subject support (37.5%) than R2 (14.3%). It was previously explained (in Section B) that the sentence "He found it easy to draw in the hiking trails." was ambiguous in isolation. In the Discourse study, the particle was also presented in final position (i.e.,"He found it easy to draw the hiking trails in.") thus resolving the ambiguity. A number of subjects may have simply preferred the unambiguous sentence structure for R1.

Pattern 4. For all four replicates, a majority of subjects responded with the Hsd UM > M particle preference.

When both the verb-particle and associated direct object noun phrase were given (pattern 1) or new (pattern 4), subjects preferred the particle to be positioned immediately after the verb as predicted by the Structural Distance hypothesis. When the Verb-particle was given and

the direct object was new (pattern 2), subjects also preferred an unmoved particle position as predicted by both the Structural Distance and Given-New hypotheses. When the verb-particle was new and the direct object was given (pattern 3) subjects still preferred (in three out of four replicate sets) the particle in an unmoved position, contrary to Hgn which predicted a preference for the moved position. The Structural Distance hypothesis, which consistently predicts an UM > M particle preference, thus received support from all four information patterns tested.

As in the Naturalness Study, Ht was rejected by a significant subject preference for an unmoved particle position in all four of the Discourse patterns. The Structural Distance and hence the Structural Complexity hypotheses were confirmed in their predictions of an unmoved particle preference for patterns 1 and 4. Both of these hypotheses make the same predictions as Hgn for pattern 2 but diverge in predicting an unmoved particle preference for pattern 3, where Hgn supports a moved position. The data confirmed the unmoved preference.

D. Summary

In sentences without motivating contexts (i.e., the isolated sentences of the Naturalness Study and the sentences of patterns 1 and 4 of the Discourse study), the most natural position for the particle is immediately next to its verb. Both the number and complexity of the

structures that a particle is moved over affect the relative naturalness of its position. In general, the further away the particle is from its verb the more unacceptable it will be.

Certain particle positions create structures that bring other strategies into play. In the Naturalness Study, particles positioned after relative clauses were significantly less acceptable than those occurring after prepositional phrases. Particles in the former position, however, violate the Anti-Interruption strategy. The weight of this strategy, in combination with the other syntactic strategies which influence particle position, results in unnatural-sounding sentences.

In contexts where the Given-New discourse strategy promotes a particular particle position, and that position concurs with the one supported by the Structural Distance and Complexity strategies (i.e., UM > M particle preference), the two types of strategies support one another overwhelmingly. When the Given-New strategy makes an opposing prediction (M > UM particle preference), the other syntactic strategies tend to override it and thus an unmoved particle position is generally preferred. However, the Given-before-New sentence planning strategy received support from the significant percentage of subjects who preferred the predicted moved particle position for one replicate in pattern three of the Discourse Study and also by subject preference for definite direct object noun phrases when the

noun phrase did not occupy final = new position.

Syntax does not operate in a vacuum. The degree of semantic cohesiveness that various verb-particle combinations exhibit, combined with the semantic effects of certain particle positions (i.e., ambiguous interpretations of sentences), lend support or opposition to the syntactic strategies discussed. Phonological strategies such as applying "heavy" stress to an object of focus (Erades' "They can count me out." example) interact with syntactic strategies as exemplified by the Given-New strategy of sentential information distribution. In Chapter V, the main findings of the present study are summarized, and suggestions are proposed for future research in the area of particle positioning.

V. Summary and Conclusion

A. Introduction

The present study has integrated theoretical discussions with empirical findings in an attempt to establish what factors govern English particle positioning. Hypothesized syntactic principles that received empirical support from this study must somehow be incorporated into the existing linguistic framework. Fraser (1972) suggested that linguists are engaged in three simple activities at the present stage of linguistic development. They are attempting to:

(a) Determine what is going on;

(b) Determine how it can be accurately characterized; and

(c) Determine how these characteristics can be integrated into existing linguistic theory.

These steps can be directly applied to the present study.

B. The Results of the Experiments

The Naturalness data revealed that sentence types in which the particle occurred immediately after the verb were judged as significantly more natural than those in which the particle was positioned after a light or heavy noun phrase. Particles positioned following a relative clause were less natural than those which followed a prepositional phrase.

The Discourse Study indicated that subjects generally preferred an unmoved over moved particle position, despite

the information structure of the test sentence. Individual particle sets (i.e., "burn down") supported the moved version and thus led to speculation as to whether the Given-New strategy or some other factor such as the directional nature of the particle was governing this trend.

The findings of both studies included a fair degree of variation in the mean scores assigned within replicates of a pattern type. This finding illustrates that preference for verb-particle constructions is a highly individual matter.

If we relate subject preferences for particle position to the syntactic hypotheses tested, it appears that Fraser's (1972) idea of "interacting forces" is a sound one. Both the structural distance and complexity principles appear to be involved in particle position with light and heavy object noun phrase constructions. These combined forces are strong enough to overrule the Given-New strategy when it competes for particle placement. Both Bock (1977) and Smyth (1979) suggested that the Given-New strategy was operative for particle placement. This study contradicts their conclusions.

C. Suggestions for Further Research

By placing tighter controls on the present experiment, possible "contaminating" factors may be excluded. Only frequently-used, natural-sounding verb-particles should be utilized. Fraser's (1976) list of "frequently encountered verb-particle combinations", from which the present test

constructions were obtained, were frequent by whose standards? One suspects that they are Fraser's. Givon (1979) revealed the need for up-to-date text counts of actual usages in a variety of written forms. An area of related research would involve the use of production data. Contexts contrived to elicit verb-particle combinations could be established with the use of graphic devices such as pictures and cartoons. For example, a picture of a woman dialing a telephone with a shocked expression on her face and a directory in her hand might evoke the use of terms such as "call up" and "look up" in a subject's description. By examining the relevant transitive verb-particle constructions in both production and comprehension data, fossilized combinations might be "weeded out".

Another area of research that might aid in characterizing the movement possibilities of verb-particle constructions is the investigation of unexpected combinations. Acceptability tests could be designed to determine how readily speakers accept different particle placements in unusual forms (i.e., "flour up the board" versus "flour the board up" with reference to baking bread). This type of test would provide data uncontaminated by factors such as how frequently a verb-particle combination had been encountered in a particular sequence.

The direct object noun phrases, constructed with definite indefinite articles, should have allowed the alternative article to provide an adequate test of

definiteness effects. "The thieves planned to return and pick up the loot", a test sentence employed in this study, does not sound natural in the indefinite, "The thieves planned to return and pick up loot." If sentences, identical except for the definiteness of the object noun phrase (i.e., containing identical verb-particle combinations), were utilized as a test for the Given-New strategy in isolated sentences, the results might have been more interpretable than they were in the present study.

A more objective means of measuring or quantifying a particle's distance from its verb could be determined. The number of syllables that intervene between a verb and its particle might be a better count than the total sentence word length. Trying to construct sentences of an equal length resulted in the unfavorable practice of "padding" noun phrases with prenominal modifiers.

A parallel study could be undertaken using an oral presentation. Written language tends to be regarded as more formal and conservative in nature, a factor which may have influenced subject ratings. As one subject commented, "I noticed that some of these sentences that I ended up rating close to "1" were the type that I have heard and even spoken in everyday street language." When the stimuli are presented in written form, the investigator is not aware what stress or intonation patterns are being applied to particular sentences. Smyth and Bock both stressed the use of "normal" intonation with their orally-presented stimuli. The problem

is - what is normal intonation with reference to verb-particle constructions in varied positions within sentential contexts? If the test sentences are produced with neutral intonation can one extrapolate from such an unnatural-sounding set of stimuli to normal language situations? A possible way of circumventing this issue would be to tape record the high school students themselves reading the set of written stimuli prior to the testing session. Trained phoneticians could then analyze the resulting data for intonation contours and stress patterns. The most frequently displayed intonation for each syntactic pattern could then be incorporated into the presentation of the stimuli for naturalness judgements.

Studies should be attempted to determine the role of semantics in particle placement. When a subject is required to rate the similarity of given verb-particle pairs does he focus on the action of the verb, the nature of the particle, or the figurative versus literal interpretation of the combination? The movement possibilities of the same verb-particle combination in a figurative versus nonfigurative context should also be examined. It may well be that the semantic cohesiveness of the entire verb-particle and associated direct object construction will have to be considered in the determination of particle movement possibilities.

D. Conclusion

The transformationalist's particle movement rule did not reflect subject preference for verb-particle placement. Fraser's (1976) suggestion of labelling individual verb-particle combinations according to a Frozeneness Hierarchy might adequately describe speaker use of particular combinations, but provides no explanation as to why alternative forms are employed. He himself lodged this complaint against Labov's inherently variable rules. Fraser's hierarchy also necessitates a fairly rigorous bookkeeping system.

Smyth *et al.* (1979) advocated a functional discourse grammar to incorporate the given-new positioning of constructions such as verb-particle combinations. However, a discourse grammar, based on the Given-New principle, would make the wrong prediction in terms of new verb-particle, given direct object constructions.

Yassin (1981) indicated that language teachers are interested "... in relating the internal patterning of V-PCs to a wider pattern, both linguistic and situational," rather than in teaching "... separate words with dictionary core meanings attached to them" (p. 12). English teachers must differentiate between rules in isolation and tendencies in contexts when describing alternative forms such as verb-particle combinations.

The linguistic literature has been characterized by an eagerness to formalize before the facts are well

established. A range of factors appears to "condition" particle positioning. The possibility of ambiguous interpretation, the degree of predictability of the object, the "news value" of the object as opposed to the action, the syntactic "length" and "complexity" of the object noun phrase, and the semantic cohesion of the verb-particle combination, are all factors found to be operative in the present study. Any attempt to integrate these results into a "formal" grammar would be quite premature at this stage. More normative data needs to be collected on these idiomatic structures before a serious attempt is made to characterize them in terms of a workable grammar. However, from the behavior of verb-particle combinations in this study, certain conclusions can be drawn about the nature of such constructions. Verb-particle combinations should be viewed as wholes and not in terms of their component parts. The particle, instead of being assigned the value of preposition or adverb, should be considered as an intrinsic part of the verb, with the combination of the two exhibiting characteristic traits in specified environments. From a psycholinguistic point of view, there is a need for a clearly delineated taxonomy of linguistic forms, such as verb-particle combinations, that are only vaguely defined at present. Such a taxonomy would aid in the development of psychophysical rules to encompass variable forms of linguistic behaviour.

A formal grammar describes the patterns (product) but does not describe the cognitive steps or processes used in producing or comprehending a language. Distinctions must be maintained among theories pertaining to the grammatical description of language properties, the speaker's knowledge of language properties and the speaker's use of his knowledge of language properties. Acceptability judgements, which record what subjects think they do, will do, or ought to do, may or may not permit access to their underlying competence. The one sure lesson to be learned from this study is that many factors influence acceptability judgements.

Experimental papers dealing with particle position have been few in number. Further empirical evidence is required to determine what people "do" with particle position as a reflection of their language generalizations. Semantic and prosodic explanations were omitted from the present study. It was the intent of this study to examine only the syntactic principles proposed for particle placement and, by investigating what principles were operative under controlled experimental conditions, aid in delimiting this area of endeavor.

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Appendix A

NATURALNESS STUDY

NAME: _____ AGE: _____

Is English your native language? _____

What languages other than English do you speak? How well?

_____

INSTRUCTIONS

Some sentences are more acceptable or natural sounding than others. In this experiment, there are three separate lists of sentences. A nine-point judgement scale is beside each sentence, with 9 corresponding to the most natural, and 1 to the least natural sounding sentence. Your task is to rate the naturalness of each sentence within a list by means of the following scale:

9: completely natural and acceptable; no problem at all

5: uncertain as to naturalness; can't decide

1: quite unnatural and awkward

The higher the number therefore, the more acceptable the sentence. The numbers between 9 and 5 all indicate relatively natural sentences, with less certainty as you move toward 5. The numbers between 5 and 1 all indicate increasingly awkward sentences.

Before you begin judging the sentences, you must anchor your scale at either end. Read through the first list of twenty-four sentences and select the one which sounds the least natural. Beside this one, circle 1.

Now, read the first list again. This time select the sentence that you find to be the most natural sounding. Beside this sentence circle 9.

Finally, read each sentence in the first list once more and assign each an acceptability rating from 1 to 9. You may repeat numbers including 1 and 9. Do not hesitate to use the center scale.

Once you have finished rating the first list, rate the second and third lists, each of which have eight sentences. For each list, anchor your scale first then rate each sentence. There are no right or wrong answers. We are interested in finding out how you, as an individual, find certain sentences to be.

1 - LEAST NATURAL 9 - MOST NATURAL

1.	The principal took the disorderly student aside for a brief chat.	1 2 3 4 5 6 7 8 9
2.	Maurice paid back a loan which the bank had granted him.	1 2 3 4 5 6 7 8 9
3.	The coach gathered the equipment which his team used together.	1 2 3 4 5 6 7 8 9
4.	The angry girl threw away a red rose from her boyfriend.	1 2 3 4 5 6 7 8 9
5.	Johnny took the Christmas wreath on the front door down.	1 2 3 4 5 6 7 8 9
6.	The president brought a change about which benefited the country.	1 2 3 4 5 6 7 8 9
7.	Ruth looked up the correct past tense form in the dictionary.	1 2 3 4 5 6 7 8 9
8.	The camp cook dashed a list of much-needed supplies off.	1 2 3 4 5 6 7 8 9
9.	Mother did the bedroom over that the baby is to occupy.	1 2 3 4 5 6 7 8 9
10.	The busy waitress wiped a table off with a quick swipe.	1 2 3 4 5 6 7 8 9
11.	Our neighbour gave back the ball that had landed in his yard.	1 2 3 4 5 6 7 8 9
12.	The model had a gown which Trent Taylor designed on.	1 2 3 4 5 6 7 8 9

1 - LEAST NATURAL 9 - MOST NATURAL

13.	The comedian got a tricky joke about mother-in-laws across.	1 2 3 4 5 6 7 8 9
14.	The other team called off the game at the last moment.	1 2 3 4 5 6 7 8 9
15.	Mrs. Simpson tried the product out that the salesman recommended.	1 2 3 4 5 6 7 8 9
16.	The policeman moved a spectator who stopped to view the accident along.	1 2 3 4 5 6 7 8 9
17.	Mr. Gatto chained up the dog which had snapped at the visitors.	1 2 3 4 5 6 7 8 9
18.	The chairman put an idea across during the long committee meeting.	1 2 3 4 5 6 7 8 9
19.	The Donaldsons took their new car back with faulty tires.	1 2 3 4 5 6 7 8 9
20.	The painter took his coat which was splattered with paint off.	1 2 3 4 5 6 7 8 9
21.	The company president closed down a factory during the workers' strike.	1 2 3 4 5 6 7 8 9
22.	The boy made a story up that he hoped would be believed.	1 2 3 4 5 6 7 8 9
23.	The detectives tore apart an apartment that the suspect had inhabited.	1 2 3 4 5 6 7 8 9
24.	The gardener cut the dead branches on the birch tree away.	1 2 3 4 5 6 7 8 9

A

1 - LEAST NATURAL 9 - MOST NATURAL

1.	Albert had also brought over a photo album.	1 2 3 4 5 6 7 8 9
2.	Tom picked a flashy tie out.	1 2 3 4 5 6 7 8 9
3.	The arsonist burned the warehouse down.	1 2 3 4 5 6 7 8 9
4.	Miss Fitch looked up the number.	1 2 3 4 5 6 7 8 9
5.	The warden mapped the hiking area out.	1 2 3 4 5 6 7 8 9
6.	Henry handed over a revised will.	1 2 3 4 5 6 7 8 9
7.	Stanley figured out the message.	1 2 3 4 5 6 7 8 9
8.	The informant passed a secret on.	1 2 3 4 5 6 7 8 9

1 - LEAST NATURAL 9 - MOST NATURAL

1. Stanley used his code book to figure the message out.	1 2 3 4 5 6 7 8 9
2. It was the informant's job to bring back the information.	1 2 3 4 5 6 7 8 9
3. It pleased Sue for Albert to bring a memento over.	1 2 3 4 5 6 7 8 9
4. The warden found it easy to draw in the hiking trails.	1 2 3 4 5 6 7 8 9
5. It would cause family strife to hand a revised will over.	1 2 3 4 5 6 7 8 9
6. Tom wanted to try on a new suit.	1 2 3 4 5 6 7 8 9
7. It alleviated Miss Fitch's fears to look the phone number up.	1 2 3 4 5 6 7 8 9
8. The thieves planned to return and pick up the loot.	1 2 3 4 5 6 7 8 9

C

Appendix B

Discourse Study

NAME: _____ AGE: _____

Is English your native language? _____

What other language(s) do you speak, and how fluently?

_____

Instructions

This study is composed of eight short stories that are incomplete. Following each story two questions are asked and possible answers are given. You are to rank the possible answers in order of preference, as follows:

1 - most preferred

2 - least preferred

You must have a most and least preferred rating for each set of answers (i.e. you can't rate both answers with the same preference number.)

Your criteria for rating the answers to each question will be - which sentence sounds more natural as an answer to that question. You may refer back to the story to help make your choice.

EXAMPLE:

Nancy and Susan went to the beach. They walked into the water up to their necks. Susan began to swim out to the diving platform. Nancy merely stared after her.

1. How well can Nancy swim?

   a. Nancy swims poorly. _____

   b. Nancy is a poor swimmer. _____

2. What can we conclude about Susan?

   a. It is apparent that Susan swims well. _____

   b. That Susan swims well is apparent. _____

I. There was a muffled thump in the dark. Miss Fitch awoke with a start. Her first impulse was to phone the police. Quickly, she looked up the number in the phone book.

1. What did Miss Fitch do first?

   a. She looked up the number. _____

   b. She looked the number up. _____

2. Why did Miss Fitch search for the number?

   a. It alleviated her fears to look the phone number up. _____

   b. It alleviated her fears to look up the phone number. _____

II. Stanley spotted a bottle lying upon the tide-swept beach. He removed the tight-fitting cap and pulled out a faded piece of paper. It was some sort of message written in a strange script. Luckily, he had just the means for figuring it out.

1. What did Stanley do with the message?

   a. He figured the message out. _____

   b. He figured out the message. _____

2. What did Stanley use to decipher the message?

   a. He used his code book to figure out the message. _____

   b. He used his code book to figure the message out. _____

III. Relatives of the deceased gathered slowly in the study. Henry surveyed the expectant faces around him. He opened his leather briefcase, reluctant to hand over the contents just yet.

1. What did Henry give to the relatives?

   a. He handed a revised will over. _____

   b. He handed over a revised will. _____

2. Why was Henry reluctant to deliver the contents of the briefcase?

   a. It would cause family strife to hand over a revised will. _____

   b. It would cause family strife to hand a revised will over. _____

IV. Albert proudly displayed his stuffed South American alligator. But that wasn't all he had brought over to show us. He reached a tanned arm into the bag and withdrew another object.

1. What else had Albert brought?

   a. He had also brought over a photo album. _____

   b. He had also brought a photo album over. _____

2. Why did Albert bring a souvenir with him?

   a. It pleased Sue for Albert to bring a memento over. _____

   b. It pleased Sue for Albert to bring over a memento. _____

V. Bill and Mike drove to Banff for the weekend. They wanted to hike on some mountain trails but were unfamiliar with the area so they decided to consult a park official as to which trails were safe for inexperienced hikers. The warden was very helpful in their request.

1. How did the warden react to this task?

   a. He found it easy to draw in the hiking trails. _____

   b. He found it easy to draw the hiking trails in. _____

2. What did the warden do?

   a. He mapped the hiking area out. _____

   b. He mapped out the hiking area. _____

VI. The thieves stored the merchandise in what seemed the perfect spot. It was an old abandoned warehouse. The plan was to recover the goods in a few days when the excitement had died down. However an arsonist beat them to it.

1. What did the arsonist do to the warehouse?

   a. He burned down the warehouse. _____

   b. He burned the warehouse down. _____

2. What did the thieves plan to do?

   a. They planned to return and pick up the loot. _____

   b. They planned to return and pick the loot up. _____

VII. The two men sat in silence on the park bench. "Nice day," one remarked casually. "Could be a change in the weather soon," the other replied just as casually. "So there have been some developments," muttered the first man, "What have you got for me?"

1. What was the informant's job?

   a. It was the informant's job to bring back information. _____

   b. It was the informant's job to bring information back. _____

2. What did the informant do next?

   a. He passed a secret on. _____

   b. He passed on a secret. _____

VIII. Tom really wanted to impress his Saturday-night date. He needed a new image. As he passed by an exclusive men's shop, something caught his eye.

1. What did Tom do inside the shop?

   a. He picked a flashy tie out. _____

   b. He picked out a flashy tie. _____

2. Why did Tom enter the shop?

   a. He wanted to try a new suit on. _____

   b. He wanted to try on a new suit. _____